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A.D. 1860, 4th FEBRUARY. N° 298.

Brewing.

LETTERS PATENT to Patrick Robertson, of Sun Court, Cornhill, in the City of London, for the Invention of "**IMPROVEMENTS IN BREWING BEER, ALE, AND PORTER, ALSO IN SEPARATING BREWERS' WORTS FROM GRAIN, AND BEER, ALE, AND PORTER FROM YEAST AND OTHER MATTERS, AND ALSO IN APPARATUS USED FOR THESE AND LIKE PURPOSES.**"

Sealed the 3rd August 1860, and dated the 4th February 1860.

PROVISIONAL SPECIFICATION left by the said Patrick Robinson at the Office of the Commissioners of Patents, with his Petition, on the 4th February 1860.

I, **PATRICK ROBERTSON**, of Sun Court, Cornhill, in the City of London,
do hereby declare the nature of the Invention for "**IMPROVEMENTS IN BREWING BEER, ALE, AND PORTER, ALSO IN SEPARATING BREWERS' WORTS FROM GRAIN, AND BEER, ALE, AND PORTER FROM YEAST AND OTHER MATTERS, AND ALSO IN APPARATUS USED FOR THESE AND LIKE PURPOSES,**" to be as follows:—

This Invention has for its object improvements in brewing beer, ale, and
porter, also in separating brewers' worts from grain, and beer, and ale, and
porter from yeast and other matters, and also in apparatus used for these and
like purposes. For these purposes, in brewing beer, ale, or porter, the wort
when drawn off or separated from the "grains" is, before being boiled, caused
to come in contact with and be acted on by charcoal, preferring animal
charcoal.

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And in order to separate brewer's worts from grains, the worts having been run off, as heretofore, the grains are then placed in a centrifugal apparatus and the remaining wort will be separated therefrom more advantageously than by subjecting the grains to pressure, and when as much wort has come off as can readily be obtained by the centrifugal action, hot water is 5 poured on to the grains, and the same are further subjected to the centrifugal action by which a further extract will be obtained.

In order to separate beer, ale, or porter from yeast which has been skimmed or removed in the ordinary manner the yeast is introduced into a centrifugal apparatus through the sides of the vessel, of which the fluids 10 cannot pass by reason of the sides being close in place of reticulated; and I find in using such a construction of centrifugal apparatus that it is desirable to employ upright ridges or projections at intervals on the inner surface of the sides of the rotating vessel, and such ridges or projections may in some cases be hollow and perforated, but I generally use the close or solid. By the 15 application of such an apparatus the yeast will be found to accumulate all round on the interior surface of the sides, and the beer, ale, or porter previously contained in the yeast will remain in the interior of the vessel, and may be run off therefrom in any convenient manner. And I find that it is desirable to have a projecting internal flanch at the upper part of the vessel 20 perforated with numerous small holes, or made with fine wire cloth coated with a suitable felting or close fabric by which as the fluid rises up the close sides of the vessel some of the fluid passes through the flanch or inward projection, and to facilitate the conveyance of such fluid to a suitable receiver the flanch is made hollow or is otherwise formed to receive and conduct off the fluid 25 which passes through. This apparatus is also applicable for the separating other fluids from other more solid matters.

And in order to separate the beer, ale, or porter from the deposits or "bottoms" taken from casks or other vessels, I subject the same to the action of centrifugal apparatus. 30

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Patrick Robertson in the Great Seal Patent Office on the 4th August 1860.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, PATRICK ROBERTSON, of Sun Court, Cornhill, in the City of London, send greeting. 35

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fourth day of February, in the year of our

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Lord One thousand eight hundred and sixty, in the twenty-third year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me the said Patrick Robertson, Her special licence that I, the said Patrick Robertson, my executors, administrators, and assigns, or such others as I, the
5 said Patrick Robertson, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention of "IMPROVE-
10 MENTS IN BREWING BEER, ALE, AND PORTER, ALSO IN SEPARATING BREWERS' WORTS FROM GRAIN, AND BEER, ALE, AND PORTER FROM YEAST AND OTHER MATTERS, AND ALSO IN APPARATUS USED FOR THESE AND LIKE PURPOSES," upon the condition (amongst others) that I, the said Patrick Robertson, my executors or administrators, by an instrument in writing under my, or their, or one of their hands
15 and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Patrick Robertson, do hereby declare
20 the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say :—

This Invention has for its object improvements in brewing beer, ale, and porter, also in separating brewers' worts from grain, and beer, and ale, and
25 porter from yeast and other matters, and also in apparatus used for these and like purposes. For these purposes, in brewing beer, ale, or porter, the wort when drawn off or separated from the "grains" is, before being boiled, caused to come in contact with and be acted on by charcoal, preferring animal charcoal.

30 The wort is run off from the grain in the usual manner, and into a cistern fitted with a perforated false bottom ; on this bottom a layer about three feet thick of animal charcoal is placed ; the charcoal being such as is employed for the filtration of solutions of sugar, and it is preferred that the animal charcoal should be mixed with a quarter of its bulk of spent hops, to facilitate the per-
35 colation of the wort. This process improves the color of beer and ale, and it also causes beer, ale, and porter brewed from it to keep better than beer brewed from wort not so treated.

In order to separate brewers' worts from grains, the worts having been run off as heretofore, the grains are then placed in a centrifugal apparatus, and the

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remaining wort will be separated therefrom more advantageously than by subjecting the grains to pressure ; and when as much wort has come off as can readily be obtained by the centrifugal action, hot water is poured on to the grains, and the same are further subjected to the centrifugal action, by which a further extract will be obtained.

The centrifugal apparatus which I employ consists of a drum mounted on a vertical axis and covered at its periphery with metal perforated with fine holes. This apparatus is similar to those heretofore employed in many manufacturing processes. The grains, when the wort has been run off from them, are placed in the drum, which is then caused to revolve with considerable velocity ; say, 10 if the drum be 40 inches in diameter, five or six hundred revolutions per minute. When the grains are dry they are washed with hot water, as above mentioned.

In order to separate beer, ale, or porter from yeast which has been skimmed or removed in the ordinary manner, the yeast is introduced into a centrifugal 15 apparatus, through the sides of the vessel of which the fluids cannot pass by reason of the sides being close in place of reticulated ; and I find in using such a construction of centrifugal apparatus, that it is desirable to employ upright ridges or projections at intervals on the inner surface of the sides of the rotating vessel, and such ridges or projections may in some cases be hollow and 20 perforated ; but I generally use the close or solid. By the application of such an apparatus the yeast will be found to accumulate all round on the interior surface of the sides, and the beer, ale, or porter previously contained in the yeast will remain in the interior of the vessel, and may be run off therefrom in any convenient manner. And I find that it is desirable to have a projecting 25 internal flanch at the upper part of the vessel perforated with numerous small holes, or made with fine wire cloth coated with a suitable felting or close fabric, by which, as the fluid rises up the close sides of the vessel some of the fluid passes through the flanch or inward projection ; and to facilitate the conveyance of such fluid to a suitable receiver, the flanch is made hollow or is other- 30 wise formed to receive and conduct off the fluid which passes through. This apparatus is also applicable for the separating other fluids from other more solid matters.

The drum which I employ is somewhat similar to the centrifugal apparatus I employ for separating wort from grains ; I usually make it about 40 inches 35 in diameter at the bottom, and I drive it at a velocity of about five or six hundred revolutions per minute ; the periphery of the drum, however, is not perforated, its height is about twenty inches, and it is smaller in diameter at the top than at the bottom, the sides inclining inwards at an inclination of

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about one in six ; the drum has within it three ridges or projections passing vertically from top to bottom of the drum, and projecting radially inwards from the periphery about four inches towards the centre ; in some cases I make these partitions perforated and double with a space of about half an inch wide
5 within each. The top of the drum has a perforated flange fixed on it, which projects several inches inwards towards the centre of the drum, and inclines somewhat downwards ; this perforated flange is lined within the drum with filtering cloth, which is attached by nipping its edges under strips of metal screwed down to the drum. If perforated and hollow partitions are employed
10 as before mentioned, holes are made through the top flange communicating with the interior of the partitions. The yeast to be separated is put into this drum, which is then set in motion, by which the yeast will be caused to adhere to the sides of the drum ; a portion of the liquid will escape through the perforated flange and over the top of the drum, where there is a suitable trough
15 or casing to receive it. A portion of the liquid also will remain in the drum, and when it is stopped will run to the bottom of it, and is then drawn off by removing a plug fitted for the purpose in the bottom of the drum. The yeast is afterwards removed by a scraper from the sides of the drum.

In order to separate the beer, ale, or porter from the deposits or "bottoms"
20 taken from casks or other vessels, I subject the same to the action of centrifugal apparatus. I use for this purpose centrifugal apparatus, such as I have described for separating wort from grains ; when the apparatus is to be used for this purpose, however, it should be lined with filtering cloth. The beer, ale, or porter separated, it is preferred to mix with worts and pass it again
25 through the process of fermentation.

In witness whereof, I, the said Patrick Robertson, have hereunto set my hand and seal, this Fourth day of August, in the year of our Lord One thousand eight hundred and sixty.

PAT^K ROBERTSON. (L.S.)

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